



Green Fortress Engineering

A HYDROGEN STAR IS BORN





Green Fortress Engineering



NSF Funded

Who We Are

- GFE: A Pioneer in Green Energy Solutions.
- A Dual Revenue and Double Bottom Line opportunity
- Spin-Up C-corp. from Indiana University

- **Eight US Patents – issued & active:**

8,691,115 8,456,562 9,416,326 8,845,772

8,518,856 7,721,601 7,833,418 8,673,811



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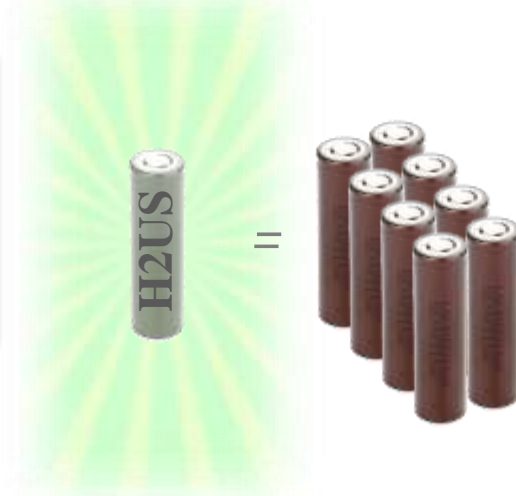
Product: **H2US** **H**ydrogen (H₂) **U**ltra **S**torage

Low Cost

High Density



H₂ Storage Vessel



DOES THE WORK OF
EIGHT
Li-ion BATTERIES

AT $\frac{1}{10}$ THE COST



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Product: **BMSG** **B**io**M**ass **S**uper **G**asifier

Four ACTIVE US Patents

8,691,115 8,456,562

9,416,326 8,845,772

High Efficiency

Multiple Products



First Pilot Plant "Stalk Stoker"



FUNDING AGENCIES

4 Year ROI

*Biomass Conversion to
Energy, Chemicals,
Fuels, and Heat*



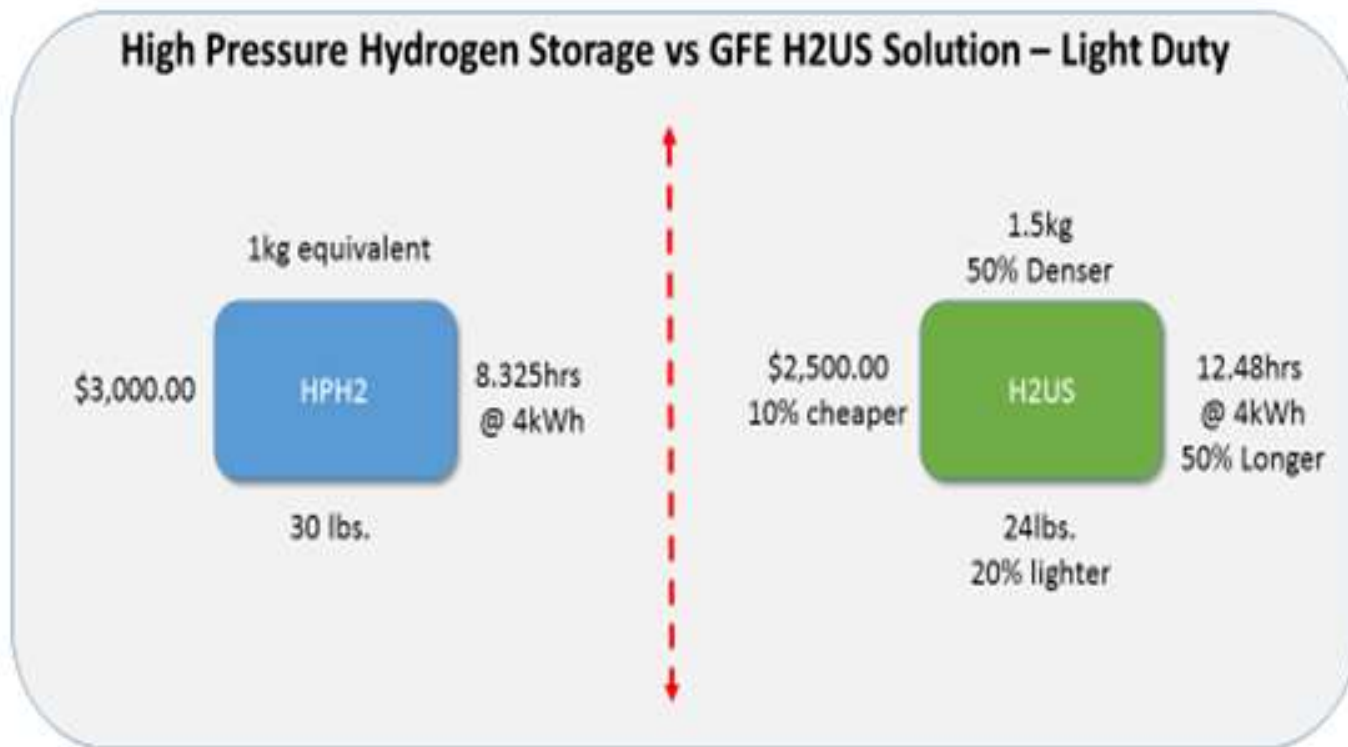


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H2 Ultra Storage

Advantage GFE

Assuming identical vessel size and different storage system peripherals requirements

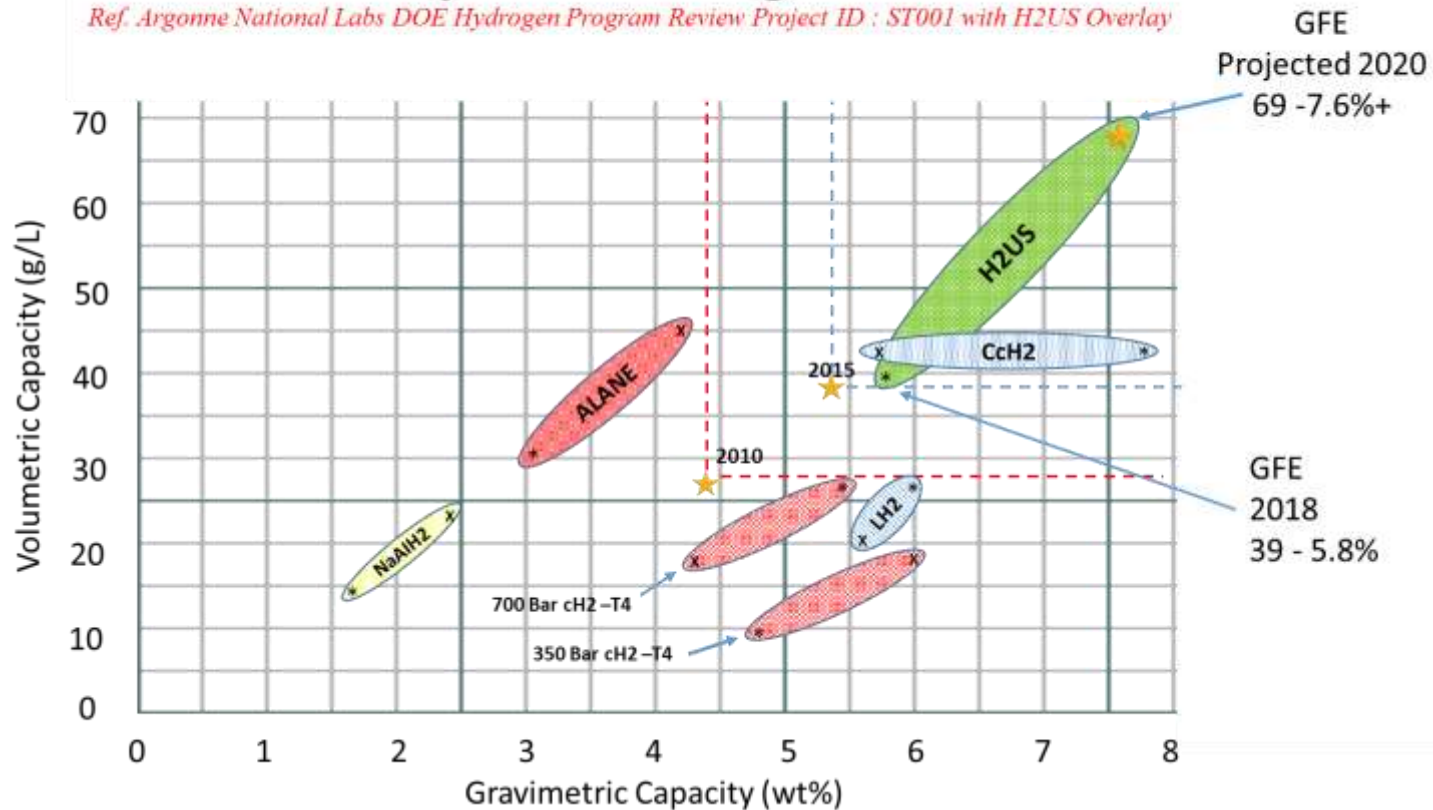




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ANL Analysis - 5.6kg Usable H₂

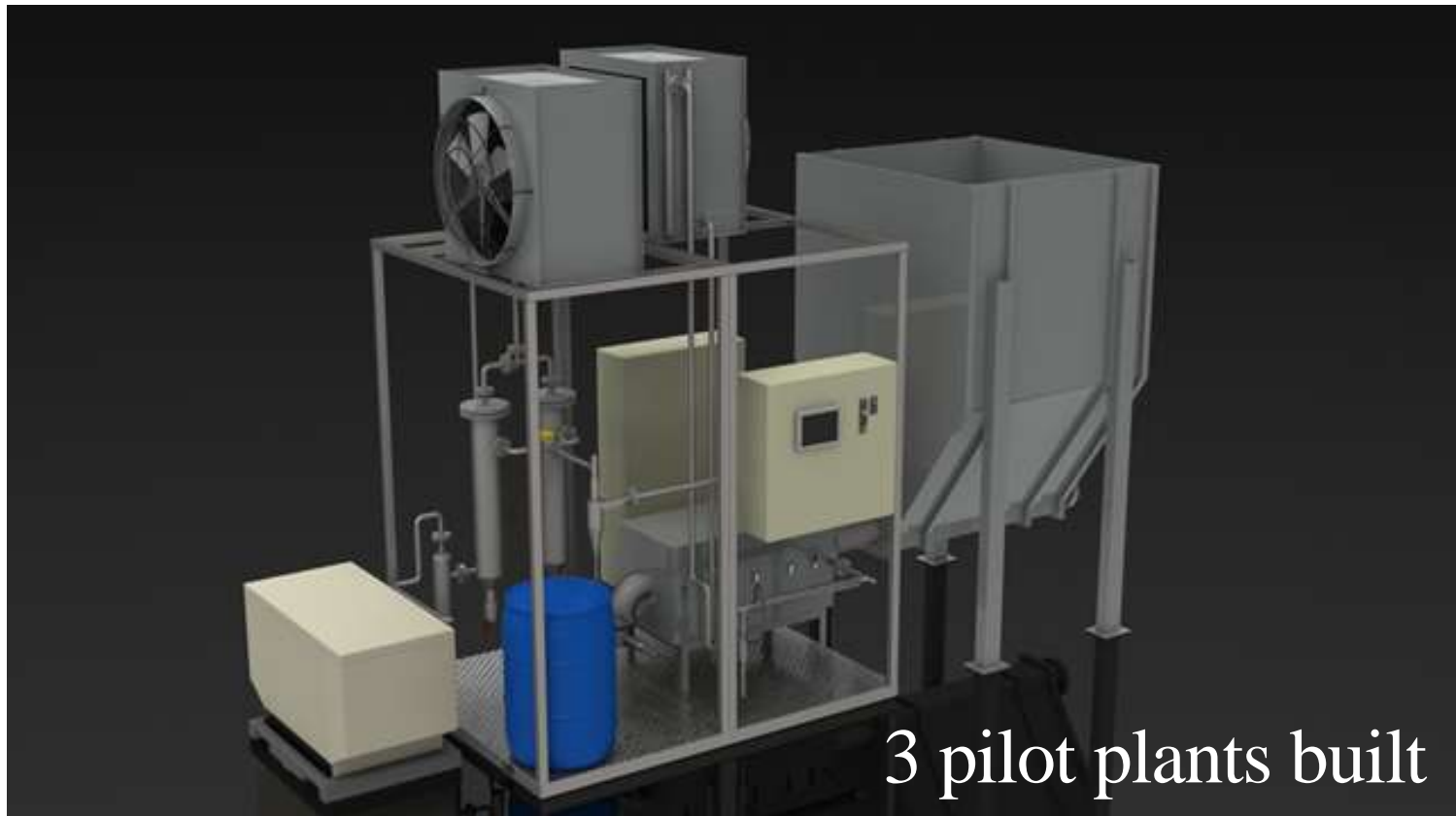
Ref. Argonne National Labs DOE Hydrogen Program Review Project ID : ST001 with H₂US Overlay





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BioMass Super Gasifier

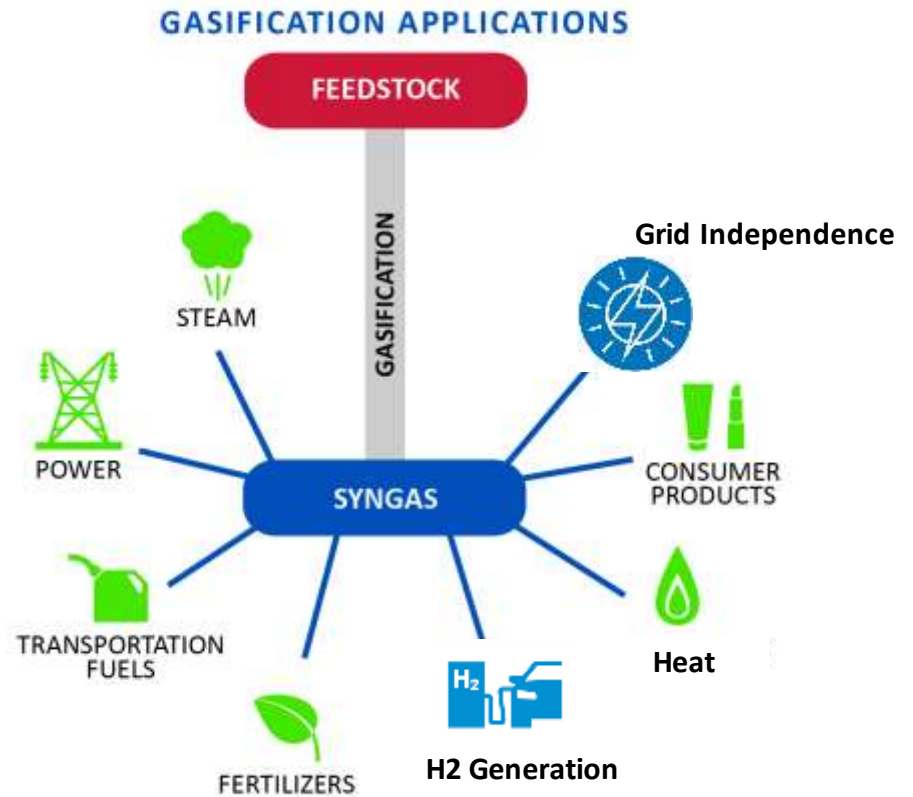


3 pilot plants built



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Ag Residue
Sylvan Slash
Sawdust
Packaging Waste
Office Waste
Contraband

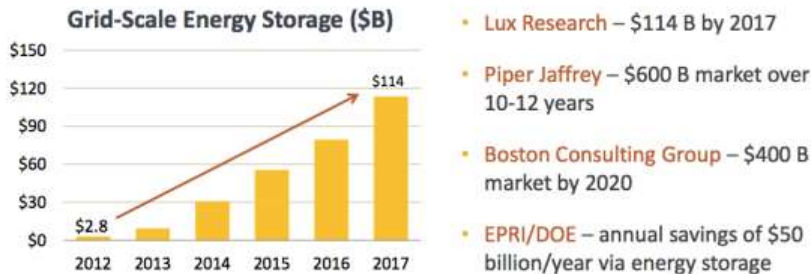




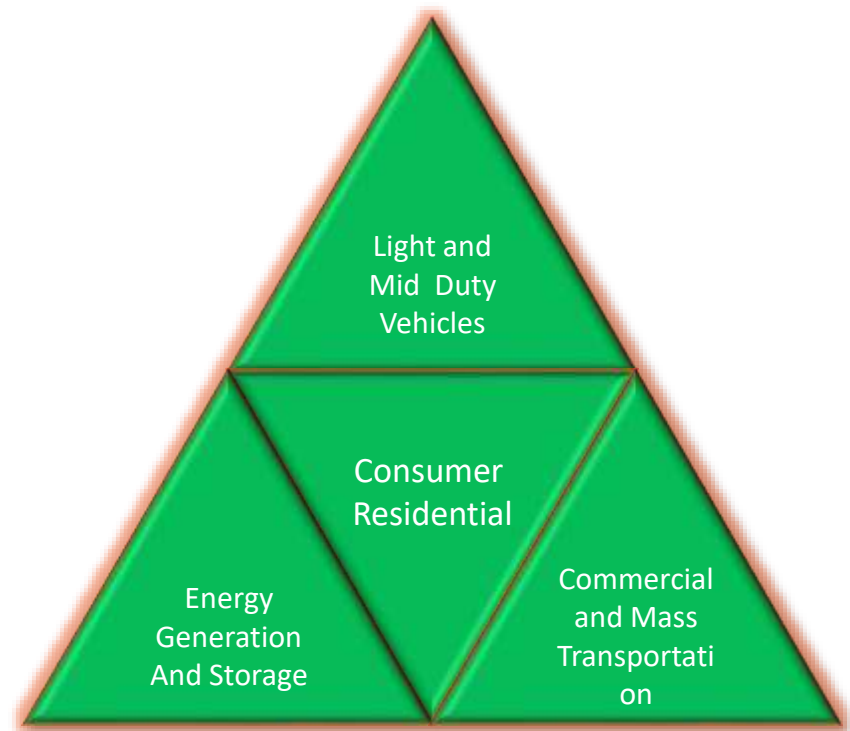
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- Hydrogen market: 154 billion USD 2022

Energy Storage Market Potential



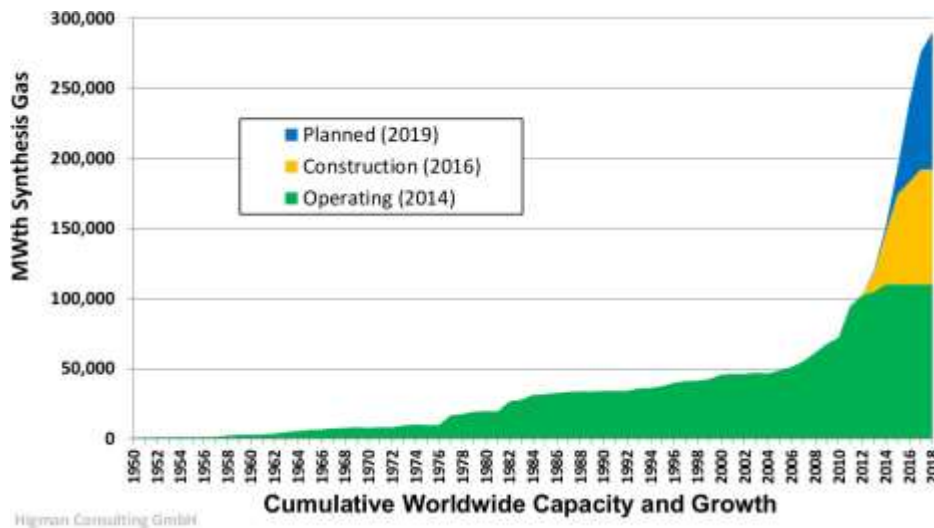
Plenty of market potential... for the right product at the right price





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Gasification demand is also growing rapidly



World gasification capacity and planned growth – by end use of syngas

Source: *Worldwide Gasification Database*



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Beachhead Markets

H2US

- Fork lift markets
- Drones
- Light-duty cars & trucks

BMSG

- Agri-business
- Municipal waste management
- Existing solar installations



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COMPETITION



H2US

Competitive Analysis

Competitor	Strength	Weakness	GFE Response	Advantage GFE
Cella - Alane	<ul style="list-style-type: none"> Cartridge based System Stable with long shelf life 	<ul style="list-style-type: none"> Co-Combustion with Diesel = carbon emissions High Pressure Not rechargeable 	GFE's H2US is a low pressure, emissions free solution. Rechargeable	✓
Luxifer Gas Cylinders - G-Stor H2	<ul style="list-style-type: none"> Light Weight for High Pressure system 	<ul style="list-style-type: none"> High Pressure Moderate density Large Foot Print 	GFE's H2US is a compact, high density, low pressure solution	✓
Toyota Miria H2 Storage	<ul style="list-style-type: none"> Early adoption Fixed internal market 	<ul style="list-style-type: none"> High pressure Moderate density Limited application dual tank system Proprietary 	GFE's H2US is a Low pressure, high density, single tank system that can be used in many applications.	✓
BMW CCH2	<ul style="list-style-type: none"> Stores H2 gas at lower temp at 350 bar. 50% more H2 storage capacity than typical 700 bar tanks 	<ul style="list-style-type: none"> High Pressure Moderate density Large Foot Print 	GFE's H2US is a compact, high density, low pressure solution	✓

BMSG

Community Power Corp.

All Power Labs

Flux-I Bio-Power



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Potential Challenges

H2US

- Slow adoption
- Long sales cycles
- Disruptive Regulations
- Battery breakthroughs

BMSG

- Long Sales Cycles
- Regulatory Changes
- Loss of Tax Credits
- Lower energy cost



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Five Year Financials

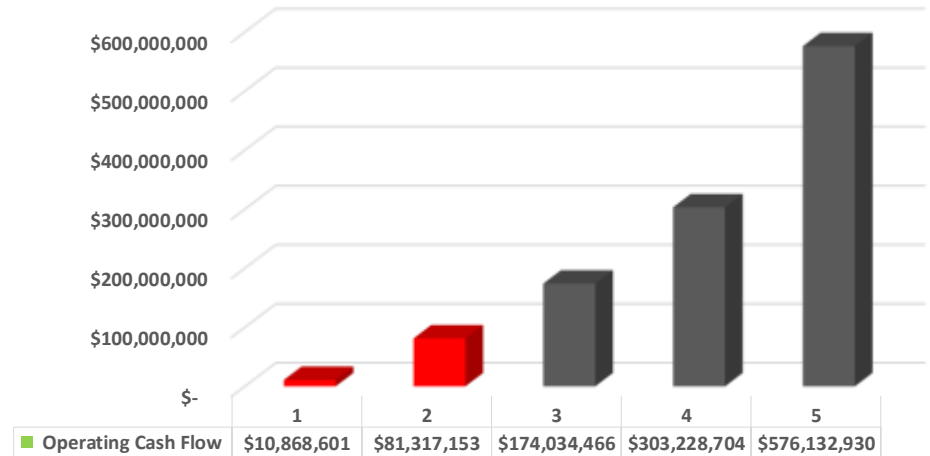
Five Year CAGR 112.93%

Annual Summary	2018	2019	2020	2021	2022
Beginning Cash	\$ 50,000	\$ 14,668,601	\$ 95,985,754	\$ 270,020,220	\$ 598,648,924
Revenues	\$ 17,450,000	\$ 102,950,000	\$ 217,600,000	\$ 414,900,000	\$ 763,800,000
Expenses	\$ 6,581,399	\$ 21,632,847	\$ 43,565,534	\$ 86,271,296	\$ 187,667,070
Operating Cash Flow	\$ 10,868,601	\$ 81,317,153	\$ 174,034,466	\$ 303,228,704	\$ 576,132,930
Investments	\$ 3,712,346				
Grants	\$ 750,000				
Ending Cash Bal	\$ 14,668,601	\$ 95,985,754	\$ 270,020,220	\$ 598,648,924	\$ 1,174,781,854

Five Year Ending Cash Balance



Five Year Net Cash Flow





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Management Team

SCHUBERT



WILKS



CRAUN



- Dr. Peter Schubert P.E. CEO, Primary Inventor, Lead Technologist

Peter is a full-rank, tenured Professor of Electrical and Computer Engineering at Indiana University-Purdue University Indianapolis and also serves as the Director for the Richard G. Lugar Center for Renewable Energy. Previously at Delphi Electronics & Safety (Kokomo, IN), he was a Technical Fellow.

- Peter has 41 US and 13 EU patents in his name and has over 100 technical publications in 9 fields of study, and he has been responsible for over 6 million USD in research grants from DOE, NASA, NSF, DOD, and USDA.
- His degrees in physics and engineering are from Washington University, University of Cincinnati, and Purdue University.

- Mr. John Craun – Senior Business Executive

John has over 20 years managing different chemical businesses and a wide variety of international business experience negotiating major sales and purchasing agreements, creation of joint ventures, and restructuring of manufacturing operations.

- He was VP of Strategic Initiatives at Vertellus Specialties and led the development of a 9 MW solar farm on company property, helping Indianapolis become the 2nd highest per capita solar city in America.
- John was President of Agriculture & Nutrition Specialties with \$260M in revenues.
- John received his degree in Chemical Engineering from Carnegie-Mellon University and holds a MBA from Indiana University.
- Craun and Schubert have worked together since 2012.

- Alan Wilks Ph.D. – Principal Investigator

Alan is an analytical chemist with extensive experience in the field of catalysis, particularly the study of those catalysts used in the petroleum and automotive fields. He was employed at UOP, Inc. for 25 years and through a series of acquisitions reached the position of Vice President and Director of AlliedSignal Corporation, now Honeywell..

- He was the founder of “SmartSignal, Inc.” now owned by General Electric and has participated in a number of research/engineering projects involving biomass conversion to energy and other technical subjects.
- He received a BS in Chemistry from the University of Kansas and a Ph.D. in Analytical Chemistry from the State University of Iowa.
- He holds numerous Patents and has authored /delivered technical papers throughout his career.

- Our University ties give us access to highly-prized student resources.
 - Post-doctoral researchers (“post-docs”)
 - Graduate students in engineering and chemistry
 - Pro bono students: MBA candidate, 2 undergraduates
 - Access to a large pool of student interns via our relationship with IUPUI.



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Fund Raising

- Seeking \$3,100,000 in equity
 - For commercialization of the H2 Ultra Storage and to complete the beta testing and certifications of the Biomass Super Gasifier
- Pre-money valuation at \$6,000,000
 - Based upon the number of patents (8) and patent applications (2) we have, NSF funded work to date on the H2US project, the near market readiness for the BMSG systems and our revenue projections.
- Additional equity free dollars
 - other grants in 2018 & 2019.